Operation/Reference Guide

Mio Modero® R-3

Remote Control Device

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Mio Remote Controls

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- Disk drive mechanisms, pan/tilt heads, power supplies, and MX Series products are warranted for a period of one (1) year.
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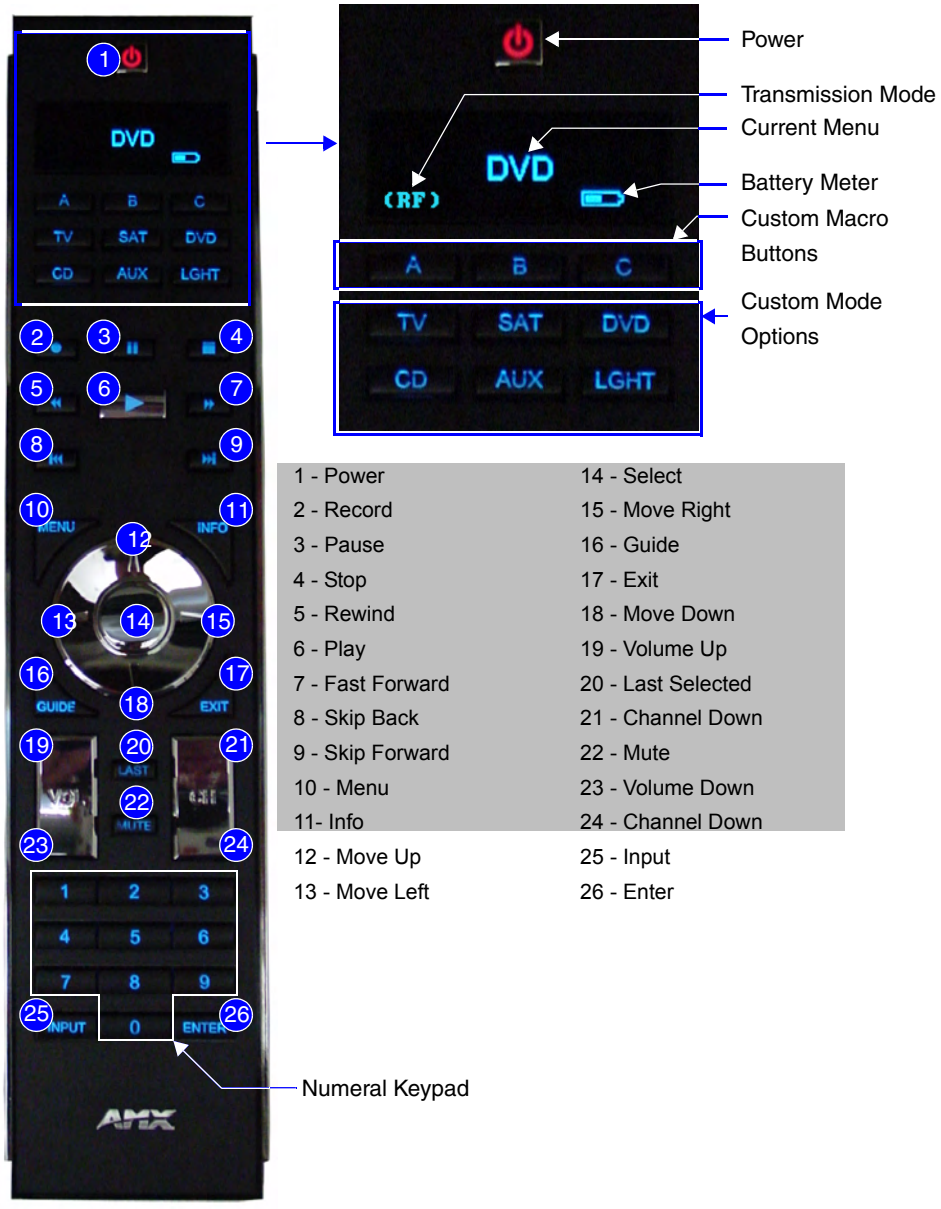
Overview

The Mio Modero® R-3

The Mio Modero® R-3 remote provides custom control features, contained in an elegant handheld rechargeable device. The Mio R-3 communicates with a NetLinx® master via a wireless Zigbee® network. Selecting a source device sends a command to the master and runs predetermined events associated with that source. Selecting a macro will run predefined events, which might not be associated with sources listed, then return the device to its previous mode.

You need VisualArchitect and KeypadBuilder to properly program this device. The application and documentation are available from www.amx.com.



1 - Power	14 - Select
2 - Record	15 - Move Right
3 - Pause	16 - Guide
4 - Stop	17 - Exit
5 - Rewind	18 - Move Down
6 - Play	19 - Volume Up
7 - Fast Forward	20 - Last Selected
8 - Skip Back	21 - Channel Down
9 - Skip Forward	22 - Mute
10 - Menu	23 - Volume Down
11- Info	24 - Channel Down
12 - Move Up	25 - Input
13 - Move Left	26 - Enter

FIG. 1 The Mio R-3 Device

Touch And Tilt Sensor

The Mio R-3 wakes up upon touching either the chrome side rails or pressing a button. When the remote times out while holding it, you can reawaken the device by tilting it. Errant jostling, such as a bumped table, will not wake the device unless you are actually holding it.

Specifications

The Mio R-3 device specifications are as follows:

Mio R-3 (FG148-03) Specifications	
Battery	Rechargeable Lithium-Ion
Transmission Frequencies	• Zigbee RF wireless network • IR 38 Khz • IR 455 Khz
Transmission Range	• ZigBee: 100 feet (30.48m) • IR 38 Khz: 100 feet (30.48m) • IR 455 Khz: 50 feet (15.24m)
Top Components	• LED - blue backlit buttons indicate device is awake • Display (OLED) - 128 x 32 pixels, active area is 29.42mm x 7.98mm • Pushbuttons - the power button is red backlit; the rest are blue backlit buttons. 45 buttons; 9 custom buttons (3 macro and 6 device).
Rear Component	• Programming Port - 2.5 mm stereo female conductor jack • Battery Door • Rechargeable Battery Connection
Dimensions (HWD)	9.50" x 2.00" x .74" (241.3 mm x 50.8 mm x 18.80 mm)
Supported Languages:	• English • French • German • Greek • Italian • Japanese • Korean • Simplified Chinese • Portuguese • Russian • Spanish • Other languages supported by Glyphs
Weight	• .45 lbs (20 kg) without battery • .55 lbs (25 kg) with battery
Certifications	• FCC ID: CWU-ZMO • CE • IEC-60950 • TELEC
Operating Environment:	• Operating Temperature: 0° to 40° C (32° to 104° F) • Storage Temperature: -20° to 70° C (-4° to 158° F) • Relative Humidity: 5% to 85%
Included Items:	• Mio-RBP Rechargeable Lithium-ion Battery (**FG147-10**)
Other AMX Equipment	• DB-9 extension cable (**FG10-727**) • Programming Cable - a 3 wire, 2.5 mm stereo jack (**FG10-817**) • Custom engraving (**FG147-01**) • Mio-RCC Kit (**FG147-03K**) • Mio-RCC Charging Base (**FG147-02**) • NXR-ZGW (**FG5791-01**) • NXR-ZRP (**FG5791-02**)

FCC Compliance

This radio module was tested and certified as a stand-alone device according to FCC Rules CFR 47, Part 15, Subpart C. If this device is installed in a manner such that the radio module FCC ID. label is not visible on the outside of the end product, a label must be placed on the end product with the following statement:

"Contains FCC ID. CWU-NXR-MO"

This device complies with Part 15 of the FCC rules. Subject to the following two conditions:

1. This device must not cause harmful interference and
2. This device must accept all interference, including interference that interferes with the operation of this device. "

The User manual for the end-device must contain the following statements in a prominent place in the manual.

Modifications not expressly approved by the manufacturer will void the user's authority to operate the equipment.

This device has been evaluated and found to be compliant with the FCC Rules for RF Exposure when the device is operated at a minimum separation distance of 2 cm. from the user and nearby persons. Operation of this device at closer distances should be avoided.

Mio Modero R-3 Setup

Inserting or Replacing the Lithium-ion Battery for the Mio R-3

The Mio Modero R-3 comes with a rechargeable Lithium-Ion battery that needs to be installed before use. To install your Lithium-Ion battery into the device:

1. Flip and turn the Mio R-3 device so that the buttons are facing away from you and the device is upside down.
2. Holding the device in both hands, place your thumbs on the battery door and slide the battery door free. The battery door should slide toward the bottom end of the device.
3. Connect the terminal end of the Lithium-Ion battery to the port as shown in FIG. 2. It may be necessary to use a thin, blunt, non-conductive object to seat the battery connector fully within its port.

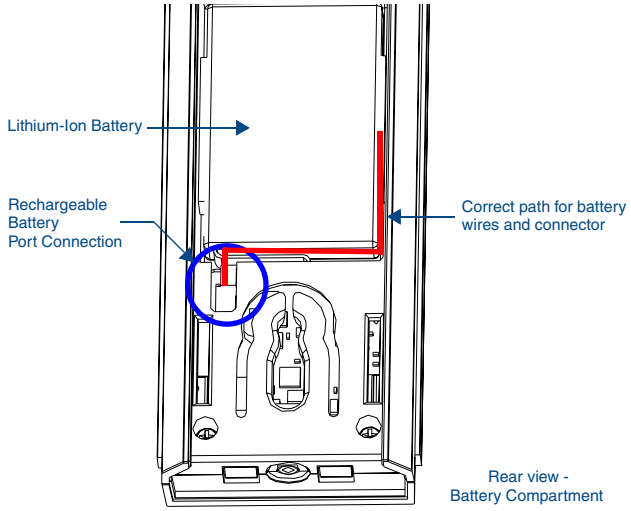

Lithium-Ion Battery
Rechargeable Battery Port Connection
Correct path for battery wires and connector
Rear view - Battery Compartment

FIG. 2 Rechargeable Battery Port on The Mio Remote

NOTE

Make sure to inset the battery wires in the case as shown in FIG. 2, or the wires may be damaged when replacing the battery door.

4. Place the battery door back on the device, and slide the door upwards to lock it in place.

Battery Low Indicator

When the battery charge level is too low to sustain continuous operation, the LCD flashes "Battery Low". If not recharged, the LCD will flash again, and then the device shuts down to prevent a total discharge of the battery. To recharge the battery, insert the Mio R-3 into the Mio Remote Charging Base (see the *Mio Remote Charging Base* section on page 27).

Installing Custom Buttons

1. Flip and turn the Mio R-3 device so that the buttons are facing away from you and the device is upside down.
2. Holding the Mio R-3 in both hands, place your thumbs on the battery door and push up to slide the battery door free. The battery door will slide in the direction of the bottom end of the device.
3. Unscrew the 6 screw points indicated in FIG. 3.

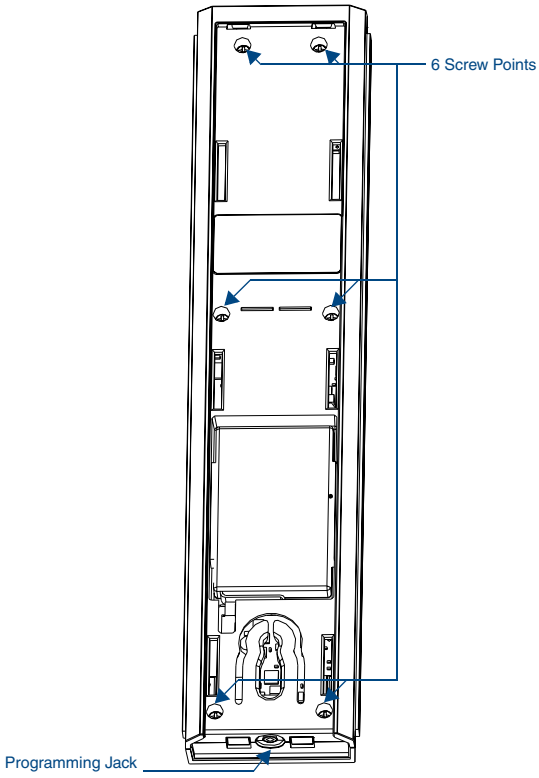


FIG. 3 Internal Mio R-3 Components

4. Turn the unit over so that the buttons are facing you.
5. Lift the top assembly away from the PCB.
6. If necessary, push out the standard buttons from the front of the top assembly.
7. Drop on your custom button pad and verify the alignment with the guide posts on the PCB.
8. Place the top assembly back down on the PCB and return the unit over, exposing the 6 screw points.
9. Tighten the 6 screw points.
10. Replace the battery door, and slide the door upwards to lock it in place.

Setup Mode

The *Setup* mode allows you to set the following device features on the Mio R-3:

- Transmit Mode
- Timeout Adjustment
- Download Mode
- Debug Mode
- Firmware Version
- Device ID
- LED Awake Brightness
- LED Sleep Brightness
- ZigBee ID PAN, Channel, and System Connection
- Site Survey

To enter *Setup* mode:

1. Press and hold the **STOP** button and the **INPUT** button. The two buttons must be pressed within 0.1 seconds of each other and held down for 2 seconds. The device indicates you are now in *Setup* mode. The available modes are listed below.
2. Press the **EXIT** key when you are finished. The Mio R-3 will automatically exit *Setup* mode after 30 seconds unless the device is in *Download* mode.

Your settings will not be lost in the event of battery removal or failure.

Transmit Mode

Press button **1** to select from one of the different available transmission modes. The *Transmit* mode changes each time **1** is pressed. The predetermined modes are:

- IR 38 Khz
- IR 455 Khz
- ZigBee Mode
- IR 38 + ZigBee
- IR 455 + ZigBee

The display indicates the selected mode. 30 seconds after selecting the mode, the menu returns to *Setup* mode.

Timeout Adjustment

Press button **2** on the remote to change the sleep timeout from the default. Each time **2** is pressed, the sleep timeout raises incrementally. The predetermined sleep timeouts are 3,6,9, and 12 seconds.

The display indicates the selected sleep timeout. 30 seconds after selecting the mode, the menu returns to *Setup* mode.

Download Mode

In order to download new firmware or a new configuration or font file to the Mio R-3 remote using the remote's program port (see *Using the Programming Jack on The Mio R-3* section on page 11 for details), the remote must first be placed into *Download* mode. Press **3** on the remote to toggle the *Download* mode *OFF* and *ON*. The *Download* mode must be ON before you can download a file to the Mio R-3 device. While the *Download* mode is *ON*, the device will not go to sleep. Once the download is complete, this setting must be returned to *Download Off*. A firmware download will cause the remote to reset and this will automatically reset the remote to *Download Off*.

To leave *Download* mode, press the **EXIT** button.

Debug Mode

Pressing button **4** on the remote toggles *Debug* mode between *ON* and *OFF*.

The remote has a useful feature known as *Debug* mode. When the remote is in *Debug* mode, pressing any of the remote's buttons will cause the remote to display the corresponding channel code (used for programming the control system) on the remote. The channel code will be shown on the remote as long as the button is pressed. The remote indicates that it is in *Debug* mode by displaying the word **DEBUG** between button presses.

Pressing the **4** button toggles to the new mode. 30 seconds after selecting the mode, the menu returns to *Setup* mode.

Firmware Version

Pressing button **5** on the remote displays the remote and ZigBee firmware versions currently loaded on the remote. To view the available firmware versions, press the **Move Up** arrow on the scroll wheel (refer to the *The Mio Modero® R-3* section on page 1 for more information) to scroll up. and pressing the **Move Down** arrow will scroll down. When finished, press **Exit** to save the changed firmware information and leave *Setup* mode.

Device ID

Pressing button **6** displays the device's Device ID number. The default Device ID number is 10001, with the first "1" highlighted, signaling to the user that it can be changed.

To change the Device ID number, press the **Move Up** arrow on the scroll wheel to scroll up. and pressing the **Move Down** arrow will scroll down. To move the cursor to the next number, use the **Move Left** or **Move Right** arrows on the scroll wheel to change positions.

After all numbers have been configured as desired, pressing the center button on the scroll wheel will store the entered Device ID into memory. After the Device ID is stored into memory, the display will return to *Setup* mode.

LED Awake Brightness

The red LEDs that backlight the Power button when the remote is awake are also used to indicate charging status. These LEDs will slowly blink on and off if the remote is place in the charging cradle and the Lithium-Ion battery pack is being charged. The LEDs will remain on when charging is complete.

Pressing button **7** will change the brightness of the Power LED from *Low*, to *Med* and then *High*. Pressing the button again toggles to the new mode. 30 seconds after selecting the mode, the menu returns to *Setup* mode.

LED Sleep Mode Brightness

The red LEDs that backlight the Power button when the remote is awake are also used to indicate charging status. These LEDs will slowly blink on and off if the remote is place in the charging cradle and the Lithium-Ion battery pack is being charged. The LEDs will remain on when charging is complete.

This setting controls the brightness of these LEDs when the remote is sleeping. When the remote is in *Setup* mode, pressing the **8** button will toggle between four brightness settings - *Sleep*: *Low*, *Med*, and *Off*. Pressing the button again toggles to the new mode. 30 seconds after selecting the mode, the menu returns to *Setup* mode.

ZigBee ID PAN, Channel, and System Connection

Pressing the **9** button will display the current ZigBee Personal Area Network (PAN) ID and channel for the device. (For more information on ZigBee Personal Area Networks, refer to the *NXR-ZGW and NXR-ZRP User Manual*.) In order to display the NetLinx Master IP and ZigBee gateway EUI addresses, press the **Move Up** arrow on the scroll wheel to scroll up. and pressing the **Move Down** arrow will scroll down. When finished, press **Exit** to save the PAN ID and channel information and leave *Setup* mode. The display will return to *Setup* mode 30 seconds after releasing the **9** button.

Site Survey

Pressing the **0** button makes the Mio R-3 scan all frequencies and store all active PAN IDs and Channels in memory. The display will show the first accessible PAN ID and Channel.

To display other PAN IDs and Channels found in the area, press the **Move Up** or **Move Down** arrows on the scroll wheel until the remote displays the desired PAN ID and Channel.

To connect to a particular PAN ID, pressing the center button on the scroll wheel will initiate the remote to connect to a network.

If no networks were found, the display will read **SCAN FAIL** before returning to *Setup* mode. To exit the Site Survey, press the **Exit** button.

Programming The Mio R-3

Most functionality of the Mio R-3 is handled using the *KeypadBuilder* application. Go to **www.amx.com** for the *KeypadBuilder Instruction Manual*.

The Mio R-3 recognizes a select number of Serial Commands. For a full list and descriptions, consult the *Serial Commands* section on page 15.

Using the Programming Jack on The Mio R-3

The programming jack is used for communication between the device and KeypadBuilder. The programming jack uses a three-wire, 2.5mm stereo jack, and you may order the programming cable (**FG10-817**) from AMX if you do not currently possess one. The Mio R-3 communicates at a 115200 baud rate.

To download KeypadBuilder Configuration Files:

1. Set the Mio R-3 Download mode to ON. See the *Setup Mode* section on page 7 for details.
2. Flip and turn the device so that the buttons are facing away from you and the device is upside down.
3. Holding the device in both hands, place your thumbs on the battery door and slide the battery door free. The battery door will slide in the direction of the bottom end of the device.
4. Connect the 2.5mm stereo plug (male) end of the programming cable (**FG10-817**) into the programming jack on the bottom side of the remote device.
5. If necessary, connect the DB-9 end of the programming cable to the female DB-9 connector on the DB-9 extension cable (**FG10-727**).
6. Connect the female DB-9 terminal end of the extension cable to the port on the back of your computer.
7. Configure the communication parameters in KeypadBuilder.

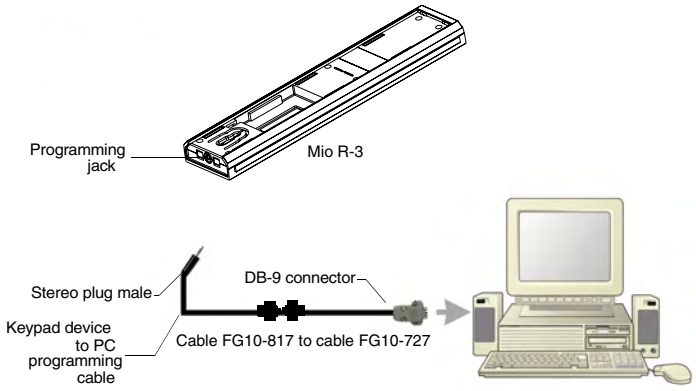


FIG. 4 Connecting The Keypad Device to Your PC

Updating Mio R-3 Firmware

Updating firmware in the Mio R-3 is also done through the programming jack. To update the main firmware for the Mio R-3:

1. Connect the Mio R-3 to your computer via the programming jack (FIG. 4).
2. Put the device into *Download* mode, as shown on page 8.
3. Open NetLinx Studio.
4. Set the *Master Communication Settings* to *Axcess Master* and set the baud rate to 115200.
5. Go to **Tools > Firmware Transfers > Send to Axcess Device...** This opens the *Send to Axcess* Dialog Window(FIG. 5)..

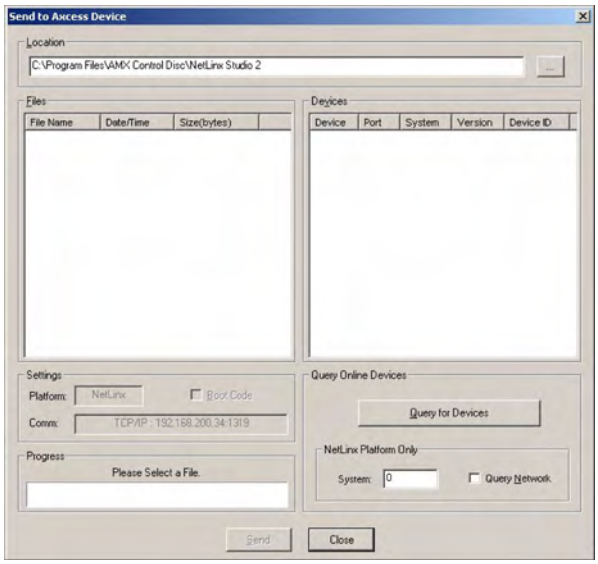


FIG. 5 Send to Axcess Dialog Window

6. Browse to the location of the firmware file.
7. Select the file within the *Files* frame.

NOTE

You must download two .tsk files for the Mio R-3: one main firmware file, and one for the ZigBee module.

8. Click **Query for Devices**.
9. The Query For Devices field will display a complete list of all devices currently connnected to NetLinx Studio capable of accepting the firmware file selected. Select the *Mio R-3*.
10. Click **Send**.
11. After device firmware download, check one more time to verify the firmware version change.
12. Click **Close**.
13. Upon confirmation of a successful send, you can exit NetLinx Studio and disconnect the programming jack.

NOTE

If you are using the Mio R-3 in conjunction with other ZigBee-enabled devices, such as the Mio R-4 and the NXA-ZGW wireless gateway, you should update the firmware to all of the ZigBee devices at the same time.

Channel Codes

The following table gives the channel codes associated with each button on the Mio R-3. Thirty-six of the buttons change channel codes based on what button was last pressed. Nine of the buttons always emit the same channel code regardless of what button was last pressed.

The Mio R3 also works in "single device mode," configurable by setting the mode to dynamic and the number of devices to 1 (see the *Send_Commands* section on page 21). That is, it always emits the same channel for the buttons. Code on the NetLinx master can interpret and re-map the channel depending on what device mode the Mio R3 is in, from selecting Device 1 - Device 6, or a combination for extra devices.

Channel Codes

Button	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6
PLAY **q**	1	41	81	121	161	201
STOP **w**	2	42	82	122	162	202
PAUSE **e**	3	43	83	123	163	203
FFW **t**	4	44	84	124	164	204
REW **i**	5	45	85	125	165	205
S.FFD **y**	6	46	86	126	166	206
S.REV **u**	7	47	87	127	167	207
REC **p**	8	48	88	128	168	208
Power Symbol	9	49	89	129	169	209
0	10	50	90	130	170	210
1	11	51	91	131	171	211
2	12	52	92	132	172	212
3	13	53	93	133	173	213
4	14	54	94	134	174	214
5	15	55	95	135	175	215
6	16	56	96	136	176	216
7	17	57	97	137	177	217
8	18	58	98	138	178	218
9	19	59	99	139	179	219
ENTER	21	61	101	141	181	221
CH+	22	62	102	142	182	222
CH-	23	63	103	143	183	223
VOL +	24	64	104	144	184	224
VOL -	25	65	105	145	185	225
MUTE	26	66	106	146	186	226
INPUT	29	69	109	149	189	229
MENU	31	71	111	151	191	231

Channel Codes (Cont.)						
Button	**Dev 1**	**Dev 2**	**Dev 3**	**Dev 4**	**Dev 5**	**Dev 6**
Up	32	72	112	152	192	232
Down	33	73	113	153	193	233
Left	34	74	114	154	194	234
Right	35	75	115	155	195	235
SELECT	36	76	116	156	196	236
EXIT	37	77	117	157	197	237
GUIDE	38	78	118	158	198	238
INFO	39	79	119	159	199	239
LAST	40	80	120	160	200	240
TV (Device 1)	241	241	241	241	241	241
SAT (Device 2)	242	242	242	242	242	242
DVD (Device 3)	243	243	243	243	243	243
CD (Device 4)	244	244	244	244	244	244
AUX (Device 5)	245	245	245	245	245	245
LGHT (Device 6)	246	246	246	246	246	246
A (Macro 1)	250	250	250	250	250	250
B (Macro 2)	251	251	251	251	251	251
C (Macro 3)	252	252	252	252	252	252

Serial Commands

The Mio R-3 remote supports a few commands that can be uploaded to the device using a terminal program such as HyperTerminal. These commands are not needed for normal usage or programming of the remote.

Serial Commands	

@BRT
Set Brightness level
	This command can be used to customize the brightness of the red LEDs that backlight the power button if the predefined brightnesses in Setup Mode are not fine enough.
	Syntax:
	`"'BRIT-<awake brightness level>,<sleep brightness level>'"`
	Variables:
	brightness level # = a value from 0 - 32.
	"'@BRT-#'" (Set LED Awake brightness level)
	"'@BRT-#,#'" (Set LED Awake brightness level, sleep brightness level)
	Example:
	`(1) "'@BRT-16'"`
	Sets the awake brightness level to 50%.

^CFG #
Enable or Disable Debug Mode
	Syntax:
	`^CFG- <command value>`
	Variables:
	• # = (1 = Debug Mode ON, 0 = Debug Mode OFF).
	Example:
	`^CFG-1`
	Turn Debug Mode ON

Serial Commands (Cont.)	

^FML	***^FML S*** *Sets a line of the display to a menu line*
	Syntax:
	`"'^FML-<variable text address range>,S'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,S'"`
	Sets dynamic line to a menu line
	
	^FML D *Sets a line of the display to a dynamic line with no level*
	Syntax:
	`"'^FML-<variable text address range>,D'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-2,D'"`
	Set Line 2 to a Dynamic Line with no Level
	
	^FML D L *Sets a line of the display to a dynamic line with a level*
	Syntax:
	`"'^FML-<variable text address range>,D,L'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,D,L'"`
	Set line 1 to a Dynamic line with level
	
	^FML D L # *Sets a line of the display to a dynamic line with a level, and sets the level style*
	Syntax:
	`"'^FML-<variable text address range>,D,L,<Level Style>'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,D,L,0'"`
	Set line 1 to a Dynamic line with level and set style to 'Level Style 0'
	Note: You can enter one of two values for level style: 0 and 1. Style 0 is the default value which displays a rectangle bargraph. Style 1 displays a linear bargraph.

^GLY
Set a glyph to display
	Syntax:
	`'^GLY-<variable text address range>,<glyph number>'"`
	Example:
	`SEND_COMMAND Panel,"'^GLY-1,10'"`
	Set a glyph with index 10 to the Mio-R3 display.
	Note: This only works if a glyph file has been loaded from KeypadBuilder.

Serial Commands (Cont.)	

IRMODE #
Sets the IR transmission frequency to either 38 or 455KHz
	Syntax:
	`IRMODE #`
	Variables:
	• <mode> =
	38 - IR only, 38KHz
	455 - IR only, 455KHz
	ZIG - ZigBee only
	ZIG38 - ZigBee + IR 38KHz
	ZIG455 - ZigBee + IR 455KHz
	Example:
	`IRMODE 455`
	Sets the IR transmission frequency to 455 KHz.
	`IRMODE ZIG`
	Sets the IR to disabled and communications to only use ZigBee.
	`IRMODE ZIG38`
	Sets the IR transmission frequency to 38KHz and configures for simultaneous transmission on ZigBee.

^JST
Set text alignment using a numeric keypad layout for those buttons with a defined address range
	Syntax:
	`"'^JST-<variable text address range>,<new text alignment>'"`
	Variable:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	• new text alignment = Value of 1 - 9 corresponds to the following locations:
	1, 4 or 7 = Left
	2, 5 or 8 = Center
	3, 6 or 9 = Right
	Example:
	`SEND_COMMAND Panel,"'^JST-1,1'"`
	Sets the text alignment to the left side of the LCD button
	Note: There is no vertical alignment.

NUMD
Sets the number of devices to be controlled by the remote
	Syntax:
	`NUMD <numberOfDevices>`
	Example:
	`NUMD 1`
	Sets the remote to control only one device.

REBOOT Reboots the remote	Syntax: `REBOOT` Example: `REBOOT` Reboots the remote

Serial Commands (Cont.)	

REVD #
Reverse the image on the LCD
	Syntax:
	`REVD #`
	Variables:
	• # = (1 = Reverse video, 0 = Normal Video)
	Example:
	`REVD 1`
	Reverses the image on the LCD; pixels previously lit go off; pixels previously off, come on.

SETD
Sets the ICSP Device Number
	Syntax:
	`SETD <deviceNum>`
	Example:
	`SETD 10020`
	Note: ICSP Device number cannot be set above 32000.

^SHO
Show or hide text with a set variable text range
	Syntax:
	`"'^SHO-<variable text address range>,<command value>'"`
	Variables:
	• variable text address range = 1 - 6; the address range corresponds to the dynamic line number.
	• command value = (0= hide, 1= show).
	Example:
	`SEND_COMMAND Panel,"'^SHO-1,0'"`
	Hides text on dynamic line 1 of the LCD button.

SLEEP-#
Set the Sleep timer or put the remote to sleep immediately.
	This command can be used if a sleep time other than 3, 6, 9, or 12 seconds is desired.
	Syntax:
	`"'SLEEP-#'" (timed sleep; a persistent command)`
	Variables:
	• # = 0 - 60 in seconds; time to wait before going to sleep. Default is 30. 0 sets the device to never sleep.
	Example:
	`SEND_COMMAND Panel,"'SLEEP-45'"`
	Sets the sleep timer to 45 seconds. After 45 seconds of inactivity, the remote will go to sleep.
	`SEND_COMMAND panel,"'SLEEP'"`
	Force the keypad to go to sleep.

@SSL
Sends a string to the master upon going to sleep
	Syntax:
	`"'@SSL-<new text>'"`
	Variables:
	• new text = 1 - 20 ASCII characters. Default string is SLEEP.
	Example:
	`SEND_COMMAND Panel,"'@SSL-KeyPad Sleep'"`
	Sends the string " KeyPad Sleep'" to the master at time of sleep.

Serial Commands (Cont.)	

@SST
Sends a string to the master upon startup
	Syntax:
	`"'@SST-<new text>'"`
	Variables:
	• new text = 1 - 20 ASCII characters. Default string is STARTUP.
	Example:
	`SEND_COMMANDPanel,"'@SST-Panel Start'"`
	Sends the string " Panel Start " to the master at time of start up.

@SWK
Sends a string to the master upon wake up
	Syntax:
	`"'@SWK-<new text>'"`
	Variables:
	• new text = 1 - 20 ASCII characters. Default string is WAKEUP.
	Example:
	`SEND_COMMAND Panel,"'@SWK-Wake KeyPad"`
	Sends the string " Wake KeyPad " to the master at time of wake up.

^TXT
Assign a text string to those buttons with a defined address range
	Sets non-unicode text.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TXT-<vt addr range>,<new text>'"`
	Variables:
	• variable text address range = 1.
	• button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	• new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Keypad,"'^TXT-1,Test Only'"`
	Sets the On and Off state text for the display.

^UNI
Set Unicode text
	For the ^UNI command (%UN and ^BMF command), the Unicode text is sent as ASCII-HEX nibbles.
	Syntax:
	`SEND_COMMAND <DEV>,"'^UNI-<vt addr range>,<button states range>,<unicode text>'"`
	Variables:
	• variable text address range = 1.
	• button states range = (0 = All states, for General buttons 1 = Off state and 2 = On state).
	• unicode text = Unicode HEX value.
	Example:
	To send the variable text 'A' in Unicode to all states of the variable text display, (for which the character code is 0041 Hex), send the following command:
	`SEND_COMMAND Keypad,"'^UNI-1,0,0041'"`
	Note: Unicode is always represented in a HEX value.

Serial Commands (Cont.)	

ZAP!
Erase Configuration Information in Flash Memory
	Syntax:
	`ZAP! t`
	Variables:
	• t = MENU or FONT or blank
	Example:
	`ZAP!`
	Clears all configuration information and erases the font. The text displayed on the LCD for the six devices returns to default and all parameters that can be set in Setup Mode are reset to their default value.
	`ZAP! MENU`
	Sets the text displayed on the LCD for the six devices to the default values.
	`ZAP! FONT`
	Erases the font from the flash.
	NOTE: These commands are intended for serial use only. These commands cannot be issued when the device's Setup Page is open.

ZIGC
Sets the ZigBee Channel
	Syntax:
	`ZIGC <channel> (Decimal)`
	Example:
	`ZIGC 26`

ZIGP
Sets the ZigBee PAN ID
	Syntax:
	`ZIGP <panId> (Decimal)`
	Example:
	`ZIGP 123A`

Send_Commands

When used with ZigBee communications and a NetLinx master, the Mio R-3 supports a small set of Send_Commands. The table below captures all Send_Commands supported by the Mio R3

Send_Commands	

@BRT
Set Brightness level
	This command can be used to customize the brightness of the red LEDs that backlight the power button if the predefined brightnesses in Setup Mode are not fine enough.
	Syntax:
	`@BRT- <awake brightness level>, <sleep brightness level>`
	Variables:
	• # = a value from 0 - 32.
	@BRT- # (Set LED Awake brightness level)
	@BRT- #, # (Set LED Awake brightness level, sleep brightness level)
	Example:
	`@BRT-16`
	Sets the awake brightness level to 50%.
	`@BRT-32,5`
	Sets the awake brightness level to 100% and sleep brightness level to approximately 15%

^CFG
Enable or Disable Debug Mode
	Syntax:
	`^CFG- <command value>`
	Variables:
	• # = (1 = Debug Mode ON, 0 = Debug Mode OFF).
	Example:
	`^CFG-1`
	Turn Debug Mode ON

^FML
Sets a line of the display to a menu line
	Syntax:
	`"'^FML-<variable text address range>,S'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,S'"`
	Sets dynamic line 1 to a menu line

Send_Commands (Cont.)	

^FML	***^FML S*** *Sets a line of the display to a menu line*
	Syntax:
	`"'^FML-<variable text address range>,S'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,S'"`
	Sets dynamic line to a menu line
	
	^FML D *Sets a line of the display to a dynamic line with no level*
	Syntax:
	`"'^FML-<variable text address range>,D'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,D'"`
	Set Line 1 to a Dynamic Line with no Level
	
	^FML D L *Sets a line of the display to a dynamic line with a level*
	Syntax:
	`"'^FML-<variable text address range>,D,L'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,D,L'"`
	Set line 1 to a Dynamic line with level
	
	^FML D L # *Sets a line of the display to a dynamic line with a level, and sets the level style*
	Syntax:
	`"'^FML-<variable text address range>,D,L,<Level Style>'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number-only one line is supported on this device.
	Example:
	`SEND_COMMAND Panel,"'^FML-1,D,L,0'"`
	Set line 1 to a Dynamic line with level and set style to 'Level Style 0'
	Note: You can enter one of two values for level style: 0 and 1. Style 0 is the default value which displays a rectangle bargraph. Style 1 displays a linear bargraph.

^GLY
Set a glyph to display
	Syntax:
	`'^GLY-<variable text address range>, <glyph number>'"`
	Example:
	`SEND_COMMAND Panel,"'^GLY-1,10'"`
	Set a glyph with index 10 to the Mio-R3 display.
	Note: This only works if a glyph file has been loaded from KeypadBuilder.

Send_Commands (Cont.)	

^JST
Set text alignment using a numeric keypad layout for those buttons with a defined address range
	Syntax:
	`'^JST-<variable text address range>,<new text alignment>'"`
	Variable:
	• variable text address range = 1; the address range corresponds to the dynamic line number.
	• new text alignment = Value of 1 - 9 corresponds to the following locations:
	1, 4 or 7 = Left
	2, 5 or 8 = Center
	3, 6 or 9 = Right
	Example:
	`SEND_COMMAND Panel,"'^JST-1,1'"`
	Sets the text alignment to the left side on dynamic line 1 of the LCD button
	Note: There is no vertical alignment.

NUMD
Sets the number of devices to be controlled by the remote
	Syntax:
	`NUMD <numberOfDevices>`
	Example:
	`NUMD 1`
	Sets the remote to control only one device.

REBOOT
Reboots the unit
	Syntax:
	`"'REBOOT'"`
	Example:
	`SEND_COMMAND Panel,"'REBOOT'"`
	Forces the device to reboot

SETD
Sets the ICSP Device Number
	Syntax:
	`SETD <deviceNum>`
	Example:
	`SETD 10020`

^SHO
Show or hide text with a set variable text range
	Syntax:
	`"'^SHO-<variable text address range>,<command value>'"`
	Variables:
	• variable text address range = 1; the address range corresponds to the dynamic line number.
	• command value = (0= hide, 1= show).
	Example:
	`SEND_COMMAND Panel,"'^SHO-1,0'"`
	Hides text on dynamic line 1 of the LCD button.

Send_Commands (Cont.)	

SLEEP
Set the Sleep timer or put the remote to sleep immediately.
	This command can be used if a sleep time other than 3, 6, 9, or 12 seconds is desired.
	Syntax:
	`SLEEP`
	Forces keypad to turn backlight off.
	`SLEEP-#`
	Sets sleep time.
	Variables:
	• # = 0 - 60 in seconds; time to wait before going to sleep.
	Example:
	`SLEEP-45`
	Sets the sleep timer to 45 seconds. After 45 seconds of inactivity, the remote will go to sleep.
	`SEND_COMMAND panel,"'SLEEP'"`
	Force the keypad to go to sleep.

@SSL
Sends a string to the master upon going to sleep
	Syntax:
	`"'@SSL-<new text>'"`
	Variables:
	• new text = 1 - 20 ASCII characters. Default string is SLEEP.
	Example:
	`SEND_COMMAND Panel,"'@SSL-KeyPad Sleep'"`
	Sends the string " KeyPad Sleep'" to the master at time of sleep.

@SST
Sends a string to the master upon start up
	Syntax:
	`"'@SST-<new text>'"`
	Variables:
	• new text = 1 - 20 ASCII characters. Default string is STARTUP.
	Example:
	`SEND_COMMAND Panel,"'@SST-Panel Start'"`
	Sends the string " Panel Start " to the master at time of start up.

@SWK
Sends a string to the master upon wakeup
	Syntax:
	`"'@SWK-<new text>'"`
	Variables:
	• new text = 1 - 20 ASCII characters. Default string is WAKEUP.
	Example:
	`SEND_COMMAND Panel,"'@SWK-Wake KeyPad"`
	Sends the string " Wake KeyPad " to the master at time of wake up.

Send_Commands (Cont.)	

^TXT
Assign a text string to those buttons with a defined address range
	Sets non-unicode text.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TXT-<vt addr range>,<button states range>,<new text>'"`
	Variables:
	• variable text address range = 1.
	• button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	• new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Keypad,"'^TXT-1,1&2,Test Only'"`
	Sets the On and Off state text for the display.
	Note: You must send an ^FML command before sending variable text to an R3 remote.

^UNI
Set Unicode text
	For the ^UNI command, the Unicode text is sent as ASCII-HEX nibbles.
	`Syntax:`
	`SEND_COMMAND <DEV>,"'^UNI-<vt addr>,<unicode text>'"`
	Variables:
	• variable text address range = 1.
	• unicode text = Unicode HEX value.
	Example:
	`SEND_COMMAND Keypad,"'^UNI-1,$00,$41'"`
	Sets the button's unicode character to 'A'.
	Note: To send the variable text 'A' in Unicode to all states of the variable text button 1, (for which the character code is 0041 Hex), send the following command:
	`SEND_COMMAND Keypad,"'^UNI-1,$00,$41'"`
	Note: Unicode is always represented in a HEX value.

WAKE
Force the keypad to turn backlight on
	Syntax:
	`SEND_COMMAND <DEV>,"'WAKE'"`
	Example:
	`SEND_COMMAND Keypad,"'WAKE'"`
	Forces the keypad to turn backlight on.

ZIGC
Sets the ZigBee Channel
	Syntax:
	`ZIGC <channel> (Decimal)`
	Example:
	`ZIGC 26`

ZIGP
Sets the ZigBee PAN ID
	Syntax:
	`ZIGP <panId> (Decimal)`
	Example:
	`ZIGP 123A`

Mio Remote Charging Base

The Mio remotes are complemented with a Mio-RCC charging base (**FG147-02**).

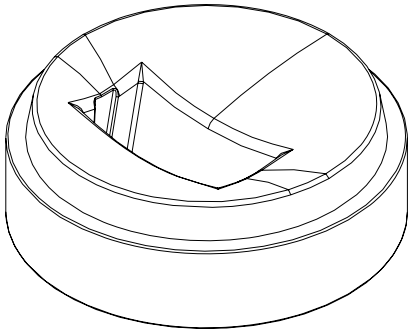


FIG. 6 Mio-RCC Charging Base

Specifications

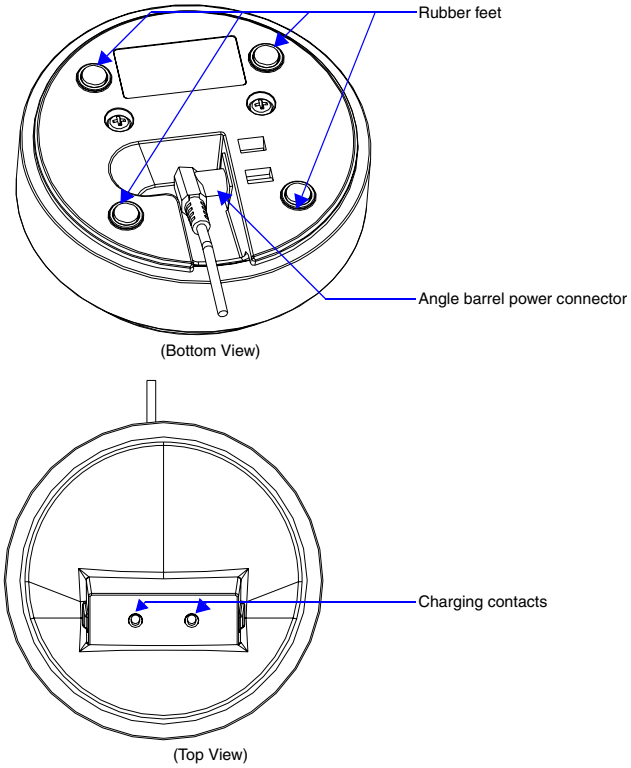


FIG. 7 Mio Remote Charging Base (Top and Bottom view)

The specifications for the Mio remote charging base and kit are as follows:

Mio-RCC Remote Charging Kit (FG147-03K) with Base (FG147-02) Specifications	
Dimensions (HWD)	Charging Base - 1.61 (4.09 cm) (height); 4.25 (10.80 cm) (diameter) Lithium Ion Battery - 2.13” x 1.38” x .28” (5.41 cm x 3.45 cm x .71 cm)
Weight	• 1.15 lbs (.52 kg) - Remote Charging Cradle • .15 lbs (.07 kg) - Power Supply • .06 lbs (.027 kg) - Rechargeable Lithium Battery
Other AMX Equipment:	• Mio R-1 **(FG147**) • Mio R-2 RF 418 **(FG147-418)** • Mio R-2 RF 433 **(FG147-433)** • Mio R-3 **(FG148-23K)** • Mio R-4 **(FG148-04)** • NXR-ZGW (**FG5791-01**) • NXR-ZRP (**FG5791-02**) • Mio-RBP Rechargeable Lithium Ion Battery **(FG147-10)** • AXR-RF 418 MHZ RF Receiver **(FG782-418)** • AXR-RF 433 MHZ RF Receiver **(FG782-433)** • Mio Modero IR Receiver **(FG5797-01xx**; xx indicates color**)**

Charging The Mio Remote with Charging Base

The Mio remotes receive power for charging from a charging base.

1. Connect the terminal end of the power supply to the bottom external power port on the Mio remote charging base. See FIG. 7 for location.
2. Route the cable through the provided channel so that it comes out the side of the base.
3. Connect the power cord to an external power source.
4. Place the bottom of the Mio remote into the charging base so the contacts on the device are on top of the charging contacts inside the charging base. The Power LED on the Mio remote blinks red to indicate it is charging and illuminates solid red when it is done. Full charge cycle for a depleted battery is approximately 3 hours.

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